



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,748	09/30/2004	Terumasa Ide	43890-692	4389
<div>7590 McDermott Will & Emery 600 13th Street NW Washington, DC 20005-3096</div>			<div>EXAMINER COMLEY, ALEXANDER BRYANT</div>	
			<div>ART UNIT 3746</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 08/17/2009</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,748	Applicant(s) IDE ET AL.	
	Examiner ALEXANDER B. COMLEY	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 9th 2009 has been entered.

Status of Claims

2. The Examiner acknowledges Applicant's amendments, arguments, and remarks filed with the Office on June 9th, 2009 in response to Final Office Action mailed by the Office on March 13th, 2009. Per Applicant's response, Claims 1, 4, and 8 have been amended. Claims 2-3 remain cancelled due to a prior amendment. All other claims remain in their previously presented form. Therefore, Claims 1 and 4-10 remain pending in the instant application. The Examiner has carefully considered each of Applicant's amendments and arguments, and they will be addressed below.

Claim Rejections - 35 USC § 102

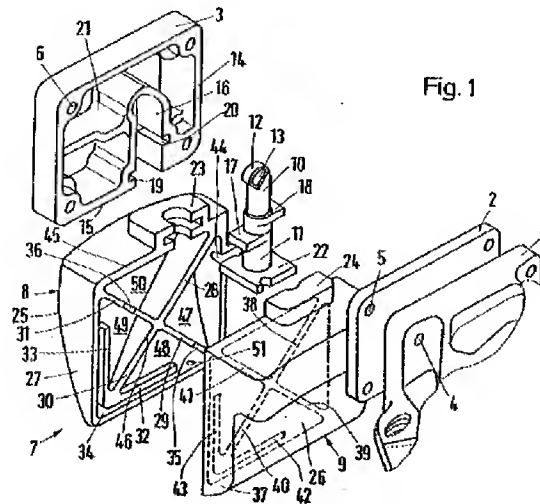
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 3746

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 6-8, and 10** are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent to Outzen (4,759,693) directed to a Suction Sound Damper.



Regarding Independent **Claim 1**, and with reference to Figure 1 shown immediately above, Outzen discloses:

(1) A hermetic type compressor (Fig. 1) comprising: a hermetic container (not shown) which accommodates stored oil, an electric motor unit (not shown), and a compressing unit (slide piston device, not shown), wherein the compressing unit comprises: a cylinder (1) for storing a reciprocally moving piston (not shown), a plate (2) having a suction hole and a discharge hole disposed at an end of the cylinder, a suction muffler (7) having a connection pipe (10) communicated to the suction hole in the plate, and a cylinder head (3) disposed at the side of the plate opposite to the cylinder, and the cylinder head is formed with a discharge

Art Unit: 3746

chamber (21) communicating with the discharge hole and a resonance chamber (8, 9) which communicates with an open side of the connection pipe; a flange (17, 18) which has a generally U-shaped protruding portion and has upper and lower surfaces, and an outer surface disposed so as to surround an outer periphery of the connection pipe; the cylinder head is provided with a generally U-shaped groove (19, 20) to which the generally U-shaped protruding portion of the flange is fitted at a position corresponding to the flange; and by fitting the flange into the groove, having an effective sealing width added to the upper and lower surfaces and the outer surface, thereby forming a seal portion so as to prevent a leakage of pressure pulsation in the resonance chamber to the outside.

As shown in Figure 1 above, Outzen discloses a hermetically-sealed, sliding piston compressor unit that utilizes a specially-designed suction muffler attachment structure designed to affix the muffler to the cylinder head using flange-and-groove connection means. In particular, Outzen states "FIG. 1 shows a cylinder block 1 of a slide piston compressor of a hermetically encapsulated small refrigerator. A valve plate 2 (which inherently contains suction and discharge openings) is provided at its end face and above it a cylinder cover in that appropriate screws are passed through the screw holes 4, 5 and 6. A suction sound damper comprises a housing 7, consisting of two flat shells 8 and 9 and unified by a suction nipple 10." (Column 4, Lines 17-23) Outzen goes on to describe the protruding flange and groove structures by stating "The suction nipple consists of a tube 11 of which the outlet end 12 is curved so that the outlet aperture 13

Art Unit: 3746

can lie against the valve plate 2 in the region of the suction valve orifice (not shown).

For this purpose, the cylinder cover 3 is provided at its end face 14 facing the cylinder with a groove 16 which extends from the side wall 15 and into which the suction nipple

10 can be pushed. Its tube 11 carries at opposed sides two axially offset projections 17

and 18 which can engage in complementary guides 19 and 20 in the wall of the groove

16. The rest of the interior of the cylinder cover 3 serves as a pressure valve chamber

21." (Column 4, Lines 24-35) It can be seen in Figure 1 that the projections (17, 18)

have corners on one end, and rounded lips that follow the curvature of the tube 10 on

the opposite end, thereby forming u-shaped protruding flanges. Moreover, it can be

seen that they each engage a corresponding u-shaped groove (19, 20) disposed in the

cylinder head 3. Outzen's flange member 22 is also u-shaped (in that it has a u-shaped

cutout), and fits into corresponding u-shaped grooves (23, 24). Outzen makes it clear

that the flange-and-groove structures provide a good seal between mating parts of the

cylinder head and muffler by first stating "By means of the interaction between the

tongue and groove (projections 17,18 and grooves 19, 20), one obtains a particularly

good seal in the interior of the housing where it is later impossible to make a visual

check." (Column 3, Lines 55-58) Moreover, Outzen states "Advantageously, the suction

nipple has a projecting retaining element (retaining element 22) which engages in

fittings of both shells. This secures the suction nipple against axial displacement. In

conjunction with the depressions, the retaining element forms a kind of labyrinth seal so

that a leakage flow is practically suppressed even if the suction nipple is not closely

surrounded by the shell material." (Column 1, Line 67 - Column 2, Line 6) Therefore, it

Art Unit: 3746

is clear that the suction muffler of Outzen is structured in the same manner as Applicant's claimed invention, and provides the same primary function (i.e. reducing pressure pulsation leakage).

5. Regarding dependent **Claims 6 & 7**, and with particular reference to Figure 1, Outzen discloses a ring-like seat, or tube 11, designed to be disposed along the inner wall of the nearly-semi-circular resonance chamber 16 of the cylinder head 3. (See Column 4, Lines 24-40) In regards to dependent Claims 8 & 10, Outzen discloses the use of appropriately selected resonance frequencies when and if less noise is desired. In particular, Outzen discloses a suction sound damper designed to eliminate resonance oscillations altogether by stating "It is particularly favourable for the shells to be substantially rectangular...Such a suction sound damper can be accommodated in the capsule to save space and has an extraordinary strength which ensures that resonance oscillations of the housing do not occur at all or lie above the hearing threshold" (Column 2, Lines 67-68; Column 3, Lines 1-6)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3746

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claims 4-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,759,693 to Outzen in view of United States Patent No. 6,464,480 to Fenocchi et al. (6,464,480) directed to an Oil Spout for a Scroll Compressor.

Outzen does not disclose an oil hole disposed at the bottom of the suction muffler specifically for allowing oil to lubricate the seal portion (although Outzen does disclose an oil hole 51 located at the bottom of the suction muffler). However, Fenocchi specifically discloses, in Figure 3 seen above, a compressor having an oil spout 34 that redirects a portion of oil entering an oil return passage 38 to supply lubrication between an outer seal 44 and a coupling 46. Fenocchi's setup provides enhanced seal reliability, as made clear by Fenocchi stating "The oil spout provides a continual flow of lubrication to the outer seal and the coupling, preventing excessive wear of the outer seal and improving seal reliability" (Column 1, Lines 54-56). Therefore, to one of ordinary skill desiring enhanced seal life through lubrication, it would have been obvious to utilize the techniques disclosed in Outzen in combination with those seen in Fenocchi in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill

Art Unit: 3746

in the art at the time of the invention to modify the suction muffler and suction base of Outzen with an oil hole similar to that of Fenocchi in order to obtain predictable results; those results being a more tightly-sealed suction muffler that greatly minimizes audible annoyances while lengthening the overall seal life.

9. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,759,693 to Outzen in view of United States Patent to Alfano et al. (5,487,648) directed to a Shell Configuration for a Hermetic Compressor.

Outzen does not disclose that the resonance frequency of a plane portion of the hermetic container and the resonance frequency of the opening of the suction muffler are independent of each other. However, Alfano et al. specifically discloses the particular method of designing the container to have a resonance frequency different than that of motor compressor itself. In particular, Alfano states, "In the hermetic motor compressors for home refrigerators, beside the efficiency, a very important issue is the noise produced by the motor compressor and transmitted outside by the shell. It is known that for reducing the noise it is necessary to shape the shell in such a way that its resonance frequency is different from the frequency of the motor compressor." (Column 1, Lines 23-29) Therefore, since the suction muffler together with the motor may form the "motor compressor", Alfano et al. makes it obvious to vary the frequencies of the hermetic container and the suction muffler. Therefore, to one of ordinary skill desiring a quieter compressor unit, it would have been obvious to utilize the techniques disclosed in Outzen in combination with those seen in Alfano in order to obtain such a

Art Unit: 3746

result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the compressor structure of Outzen with the differing resonant frequencies of Alfano et al. in order to obtain predictable results; those results being a much quieter compressor that eliminates much of the audible annoyances associated with comparable compressors.

Response to Arguments

10. Applicant's arguments filed June 9th, 2009 have been fully considered but they are not persuasive. The Examiner's responses can be seen below.

11. In regards to Applicant's argument that the flanges (17, 18) and grooves (19, 20) of Outzen are not generally u-shaped, the Examiner must respectfully disagree. As stated in the analysis for Independent Claim 1, it can be seen in Figure 1 that the projections (17, 18) have corners on one end, and rounded lips that follow the curvature of the tube 10 on the opposite end, thereby forming two u-shaped protruding flanges on the connection pipe 10. Moreover, it can be seen that they each engage a corresponding u-shaped groove (19, 20) disposed in the cylinder head 3. Moreover, the Examiner must respectfully assert that a rectangular shape is still "generally u-shaped", in that it would form a boxy-type u-shape with corners rather than rounded edges.

12. In regards to Applicant's argument that the Examiner's interpretation is inconsistent, the Examiner must respectfully assert that a suction muffler of a

Art Unit: 3746

compressor can have more than a single resonance chamber. Hence, both (8, 9) and (16) can be considered separate resonance chambers within the same suction muffler. Moreover, these two chambers are connected with one another through connecting pipe 10, and therefore, they could be considered a large, singular resonance chamber.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/
Examiner, Art Unit 3746

/Charles G Freay/
Primary Examiner, Art Unit 3746

ABC